

CLAIMS

What is claimed is:

1. A write-once disc with at least one record layer, comprising:
at least one update area in which updated predetermined information is recorded; and
an access information area in which location information regarding the updated predetermined information, which is last updated and recorded in the at least one update area is recorded for a predetermined period.
2. The disc of claim 1, wherein the location information is recorded in the access information area whenever a predetermined number of recording operations end.
3. The disc of claim 1, wherein the location information is recorded in the access information area whenever a predetermined number of blocks of the at least one update area are filled with information.
4. The disc of claim 1, wherein the location information is recorded in the access information area several times.
5. The disc of claim 1, wherein the location information is recorded in the access information area when a number of times the updated predetermined information recorded in the at least one update area is a predetermined number.
6. A write-once disc with at least one record layer, comprising:
a plurality of update areas in which predetermined information is updated and sequentially recorded; and
an access information area in which location information regarding the updated information, which is last updated and recorded in the update areas, is recorded per predetermined period,
wherein the location information regarding the updated information is recorded in at least one of the update areas.

7. The disc of claim 6, wherein the location information is recorded in the access information area when a predetermined number of recording operations end.

8. The disc of claim 6, wherein the location information is recorded in the access information area when a predetermined number of blocks of the update areas are filled with information.

9. The disc of claim 6, wherein the location information is recorded in the access information area several times.

10. The disc of claim 6, wherein the location information is recorded in the access information area when a number of times the updated predetermined information recorded in the update areas reaches a predetermined number.

11. The disc of claim 6, wherein the location information is recorded in the access information area when data recording is performed in one of the update areas according to a predetermined number of recording operations.

12. A method of reducing an access time for accessing a write-once disc with at least one record layer, the method comprising:

sequentially recording updated predetermined information in at least one update area which is present in at least one of a lead-in area, a data area, a lead-out area, and an outer area of the disc; and

recording location information regarding the updated predetermined information, in an access information area present in at least one of the lead-in area, the data area, the lead-out area, and the outer area per predetermined period.

13. The method of claim 12, wherein the recording of the location information is performed whenever a predetermined number of recording operations end.

14. The method of claim 12, wherein the recording of the location information is performed whenever a predetermined number of blocks of the update area are filled with data.

15. The method of claim 12, wherein during the recording of the location information, the location information is recorded in the access information area several times.

16. A method of reducing access time of a write-once disc including at least one record layer, the method comprising:

sequentially recording updated predetermined information in a plurality of update areas which are present in at least one of a lead-in area, a lead-out area, and an outer area of the disc;

recording location information regarding the updated predetermined information, in one of the update areas; and

recording location information regarding the updated predetermined information, in an access information area present in at least one of the lead-in area, the lead-out area, and the outer area per predetermined period.

17. The method of claim 16, wherein the recording of the location information is performed whenever a predetermined number of recording operations end.

18. The method of claim 16, wherein the recording of the location information is performed whenever a predetermined number of blocks of the update area are filled with data.

19. The method of claim 16, wherein during the recording of the location information, the location information is repeatedly recorded in the access information area several times.

20. The method of claim 16, wherein the recording of the location information is performed after a predetermined number of recording operations are performed in one of the update areas.

21. The method of claim 16, wherein the recording of the location information is performed when a number of times of updating the update areas is a predetermined number.

22. An apparatus for recording information on a write-once disc with at least one record layer, the apparatus comprising:

a recording and/or reading unit that records information on and/or reads the information from the write-once disc; and

a controller that controls the recording and/or reading unit to sequentially record updated predetermined information in at least one update area of the write-once disc, and record location information regarding the updated predetermined information, in an access information area of the write-once disc per predetermined period.

23. The apparatus of claim 22, wherein the controller controls the recording/reading unit to record the location information in the access information area whenever a predetermined number of recording operations end.

24. The apparatus of claim 22, wherein the controller controls the recording/reading unit to record the location information in the access information area whenever a predetermined number of blocks of the update area are filled with information.

25. An apparatus for recording information on a disc with at least one record layer, the apparatus comprising:

a recording and/or reading unit that records information on and/or reads the information from the disc; and

a controller that controls the recording/reading unit to sequentially record updated predetermined information in a plurality of update areas of the disc; record location information regarding the updated predetermined information, which is last updated in the at least one of the update areas, in one of the update areas; and record location information regarding information last updated in the updated area in an access information area of the write-once disc per predetermined period.

26. The apparatus of claim 25, wherein the controller controls the recording/reading unit to record the location information in the access information area whenever a predetermined number of recording operations end.

27. The apparatus of claim 25, wherein the controller controls the recording/reading unit to record the location information in the access information area whenever a predetermined number of blocks of the update area are filled with information.

28. The apparatus of claim 25, wherein the controller controls the recording/reading unit to record the predetermined information updated in the update area in recording operation units.

29. The apparatus of claim 25, wherein the controller controls the recording/reading unit to record the location information in the access information area whenever a predetermined number of recording operations are performed in one of the update areas.

30. The apparatus of claim 25, wherein the controller controls the recording/reading unit to record the location information in the access information area when a number of times of recording the predetermined information in the update areas is a predetermined number.

31. An apparatus recording and/or reading information on/from a write-once disc having at least one record layer, the apparatus comprising:

a recorder and/or reader recording and/or reading the information on/from the disc;
a controller controlling the recorder and/or the reader to sequentially record updated information in at least one update area of the disc, and record location information, specifying a recording position of the updated information in the update area, in an access information area of the disc, and controlling the recorder and/or the reader to read the updated information from the disc.

32. The apparatus of claim 31, wherein the updated information is recorded in the at least one update area in recording units.

33. The apparatus of claim 31, wherein the location information is recorded in the access information area when a predetermined number of recording operations end.

34. The apparatus of claim 31, wherein the location information is recorded in the access information area when physical recording blocks of the at least one update are filled with data.

35. The apparatus of claim 31, wherein the location information is recorded in the access information area when the at least one update area is updated a predetermined number of times.

36. The apparatus of claim 31, wherein the update area further comprises a first update area A and a second update area B.

37. The apparatus of claim 36, wherein the updated information is updated n times and sequentially recorded as $A\#1, A\#2, \dots, A\#n+1, \dots, A\#2n$ in the first update area A, and the updated information is updated n times and sequentially recorded as $B\#n+1, B\#n+2, \dots, B\#2n$ in the second update area B.

38. The apparatus of claim 37, wherein the information $A\#1, A\#2, \dots, A\#n+1, \dots, A\#2n$ further includes information specifying location of the last updated information recorded in the second update area B.

39. A method of reducing access time to information recorded on a write-once disc, the method comprising:

testing recording conditions in a recording condition test area for recording operations;
recording information on the disc based on the test result; and
recording temporary management information in a temporary defect management area (TDMA) when a recording operation ends, thereby updating in recording operation units the information recorded in the TDMA and the information recorded on the disc based on the test result.

40. A computer readable medium encoded with processing instructions for implementing the method of claim 39 performed by a processor.

41. A computer readable medium encoded with processing instructions for implementing the method of claim 12 performed by a processor.

42. A computer readable medium encoded with processing instructions for implementing the method of claim 16 performed by a processor.